CLAIMS

1. A database operating device for operating a database through processing divided into multiple layers, the processing being one or both of activating processing, which activates processing of another layer, and activated processing, which is activated by the activating processing, one or more of the activated processing being database operation processing for operating the database, comprising:

a group defining means which defines a processing group including one or more of the activating processing; and

a processing control means which, in accordance with progress of activating processing included in the processing group and a processing result of database operation processing that is activated by the activating processing included in the processing group, controls at least what operation is performed on the database through the database operation processing.

2. A database operating device according to Claim 1,

wherein the layers are three or more separate layers, and

wherein the processing control means further controls, in accordance with the progress of the activating processing included in the processing group and the processing result of the activated processing that is activated by the activating processing included in the processing group but is not database operation processing, processing specifics (contents) of the activated processing that is not database operation processing.

3. A database operating device according to Claim 1, further comprising a library means which includes one or more of the database operation processing,

wherein activating processing that activates the database operation processing activates the database operation processing included in the library means.

4. A database operating device according to Claim 1 or 3, further comprising:

a storage area setting means which sets, for each of the processing groups, a storage area for the activating processing that is included in the processing group and the activated processing that is activated by the activating processing included in the processing group; and

a data management means which manages data used for processing included in each of the processing groups in the

storage areas that are set to the respective processing groups.

5. A database operating device according to Claim 1, 3 or 4,

wherein each one of the activated processing sends a returned value which shows the processing result to the activating processing that activates this activated processing,

wherein the layers include an interface layer, an application layer, and a database layer,

wherein the interface layer includes one or more of user interface processing which activates, as the activating processing, in response to external operation, the activated processing that is included in the application layer, and performs processing in accordance with the returned value sent from the activated processing that is activated by the user interface processing,

wherein the application layer includes one or more of application processing which, as the activating processing and the activated processing, is activated by the interface processing, activates one or more of the database operation processing included in the database layer, carries out a service that uses the database in accordance with the returned value sent from the activated database operation processing, and sends a result of the service as the returned value to the user interface processing, and

wherein the database layer includes one or more of the database operation processing which, as the database operation processing, is activated by the application processing, operates the database, and sends a result of the operation of the database as the returned value to the application processing.

6. A database operating device according to Claim 5, wherein the processing control means controls execution of the database operation processing as follows:

when the application processing included in the processing group activates the database operation processing for the first time, the activated database operation processing is connected to the database; and

when the database operation processing that is activated last by the application processing included in the processing group ends, or when the database operation processing fails, the activated database operation processing is disconnected from the database.

7. A database operating device according to Claim 5 or 6, wherein the processing control means commits to the database a result of the database operation processing activated by the application processing included in the processing group in a case where the database operation processing that is activated last by the application processing included in the processing group is successful, and

wherein, in any other cases, the processing control means restores the database to a state before the database operation processing is first activated by the application processing included in the processing group.

8. A database operating device according to any one of Claims 5 through 7, wherein, when the database operation processing activated by the application processing included in the processing group fails, the processing control means restores the database to a state before the database operation processing is first activated by the application processing included in the processing group.

9. An information processing device for performing given information processing through processing divided into multiple layers, the processing being one or both of activating processing, which activates processing of another layer, and activated processing, which is activated by the activating processing, comprising:

a group defining means which defines a processing group including one or more of the activating processing; and

a processing specifics control means which, in accordance with progress of the activating processing included in the processing group and a processing result of the activated processing that is activated by the activating processing included in the processing group, controls the specifics of the activated processing.

10. A database operating method of operating a database through processing divided into multiple layers, the processing being one or both of activating processing, which activates processing of another layer, and activated processing, which is activated by the activating processing, one or more of the activated processing being database operation processing for operating the database, comprising:

a defining step which defines a processing group including one or more of the activating processing; and

a processing control step which, in accordance with progress of activating processing included in the processing group and a processing result of database operation processing that is activated by the activating processing included in the processing group, controls at least what operation is performed on the database through the database operation processing.

11. A database operating method according to Claim 10,

wherein the layers are three or more separate layers, and

wherein the processing control step further controls, in accordance with the progress of the activating processing included in the processing group and the processing result of the activated processing that is activated by the activating processing included in the processing group but is not database operation processing, processing specifics (contents) of the activated processing that is not database operation processing.

12. An information processing method for performing given information processing through processing divided into multiple layers, the processing being one or both of activating processing, which activates processing of another layer, and activated processing, which is activated by the activating processing, comprising:

a group defining step of defining a processing group which includes one or more of the activating processing; and

a processing specifics control step of controlling, in accordance with progress of the activating processing included in the processing group and a processing result of the activated processing that is activated by the activating processing included in the processing group, specifics of the activated processing.

13. A program for a database operating device for operating a database through processing divided into multiple layers, the processing being one or both of activating processing, which activates processing of another layer, and activated processing, which is activated by the activating processing, one or more of the activated processing being database operation processing for operating the database, where the program causes a computer to execute:

a group defining step which defines a processing group including one or more of the activating processing; and

a processing control step which, in accordance with progress of activating processing included in the processing

group and a processing result of database operation processing that is activated by the activating processing included in the processing group, controls at least what operation is performed on the database through the database operation processing.

14. A program according to Claim 13,

wherein the layers are three or more separate layers, and

wherein the processing control step further controls, in accordance with the progress of the activating processing included in the processing group and the processing result of the activated processing that is activated by the activating processing included in the processing group but is not database operation processing, processing specifics (contents) of the activated processing that is not database operation processing.

15. A program according to Claim 13, further comprising a library means which includes one or more of the database operation processing,

wherein activating processing that activates the database operation processing activates the database operation processing included in the library means.

16. A program according to Claim 13 or 15, wherein the program further causes a computer to execute:

a storage area setting step which sets, for each of the processing groups, a storage area for the activating processing that is included in the processing group and the activated processing that is activated by the activating processing included in the processing group; and

a data management step which manages data used for processing included in each of the processing groups in the storage areas that are set to the respective processing groups.

17. A program according to Claim 13, 15 or 16,

wherein each one of the activated processing sends a returned value which shows the processing result to the activating processing that activates this activated processing,

wherein the layers include an interface layer, an application layer, and a database layer,

wherein the interface layer includes one or more of user interface processing which activates, as the activating processing, in response to external operation, the activated processing that is included in the application layer, and performs processing in accordance with the returned value sent

from the activated processing that is activated by the user interface processing,

wherein the application layer includes one or more of application processing which, as the activating processing and the activated processing, is activated by the interface processing, activates one or more of the database operation processing included in the database layer, carries out a service that uses the database in accordance with the returned value sent from the activated database operation processing, and sends a result of the service as the returned value to the user interface processing, and

wherein the database layer includes one or more of the database operation processing which, as the database operation processing, is activated by the application processing, operates the database, and sends a result of the operation of the database as the returned value to the application processing.

18. A program according to Claim 17, wherein the processing control step controls execution of the database operation processing as follows:

when the application processing included in the processing group activates the database operation processing for the first time, the activated database operation processing is connected to the database; and

when the database operation processing that is activated last by the application processing included in the processing group ends, or when the database operation processing fails, the activated database operation processing is disconnected from the database.

19. A program according to Claim 17 or 18,

wherein the processing control step commits to the database a result of the database operation processing activated by the application processing included in the processing group in a case where the database operation processing that is activated last by the application processing included in the processing group is successful, and

wherein, in any other cases, the processing control step restores the database to a state before the database operation processing is first activated by the application processing included in the processing group.

20. A program according to any one of Claims 17 through 19,

wherein, when the database operation processing activated by the application processing included in the processing group fails, the processing control step restores the database to a state before the database operation processing is first activated by the application processing included in the processing group.

21. A program of an information processing device for performing given information processing through processing divided into multiple layers, the processing being one or both of activating processing, which activates processing of another layer, and activated processing, which is activated by the activating processing, wherein the program causes a computer to execute:

a group defining step of defining a processing group which includes one or more of the activating processing; and

a processing specifics control step of controlling, in accordance with progress of the activating processing included in the processing group and a processing result of the activated processing that is activated by the activating processing included in the processing group, specifics of the activated processing.